

Amendments to the Claims

The listing of claims will replace the previous version, and the listing of claims:

Listing of Claims

1. (Previously presented) A fluorescent substance comprising a crystal of nitride or oxy-nitride having a β -type Si_3N_4 crystal structure having Eu^{+2} solid-dissolved into it and emitting a fluorescent light having a peak within a range of 500nm to 600nm in wavelength by being irradiated with an excitation source.
 2. (Original) A fluorescent substance according to claim 1, wherein said crystal having a β -type Si_3N_4 crystal structure comprises a β -type sialon ($\text{Si}_{6-z}\text{Al}_z\text{O}_z\text{N}_{8-z}$, where $0 \leq z \leq 4.2$).
 3. (Previously presented) A fluorescent substance according to claim 2, wherein the value of said z is $0 \leq z \leq 0.5$.
 4. (Previously presented) A fluorescent substance according to claim 1, wherein in case of representing Eu, A (where A is one, two or more kinds of elements selected from C, Si, Ge, Sn, B, Al, Ga and In) and X (where X is one or two kinds of elements selected from O and N) which are contained in said nitride or oxy-nitride crystal with a composition formula $\text{Eu}_a\text{A}_b\text{X}_c$ (where $a + b + c = 1$), a, b and c in this formula meet the following relations (i) to (iii):

5. (Previously presented) A fluorescent substance according to claim 1, wherein in case of representing said nitride or oxy-

nitride crystal with a composition formula $\text{Eu}_a\text{Si}_{b_1}\text{Al}_{b_2}\text{O}_{c_1}\text{N}_{c_2}$ (where $a + b_1 + b_2 + c_1 + c_2 = 1$), a , b_1 , b_2 , c_1 and c_2 in this formula meet the following relations (i) to (v):

$$0.00001 \leq a \leq 0.1 \dots \dots \dots \dots \dots \dots \quad (\text{i})$$

$$0.28 \leq b_1 \leq 0.46 \dots \dots \dots \dots \dots \dots \dots \quad (\text{ii})$$

$$0.001 \leq b_2 \leq 0.3 \dots \dots \dots \dots \dots \dots \dots \quad (\text{iii})$$

$$0.001 \leq c_1 \leq 0.3 \dots \dots \dots \dots \dots \dots \dots \quad (\text{iv})$$

$$0.4 \leq c_2 \leq 0.62 \dots \dots \dots \dots \dots \dots \dots \quad (\text{v})$$

6. (Previously presented) A fluorescent substance according to claim 5, wherein in said composition formula $\text{Eu}_a\text{Si}_{b_1}\text{Al}_{b_2}\text{O}_{c_1}\text{N}_{c_2}$, the relation between b_1 and b_2 and the relation between c_1 and c_2 respectively meet the following relations:

$$0.41 \leq b_1 + b_2 \leq 0.44, \text{ and}$$

$$0.56 \leq c_1 + c_2 \leq 0.59.$$

7. (Previously presented) A fluorescent substance according to claim 1, wherein said excitation source is an ultraviolet light or a visible light of 100nm to 500nm in wavelength.

8. (Previously presented) A fluorescent substance according to claim 7, wherein said excitation source is a violet light or a blue light of 400nm to 500nm in wavelength.

9. (Previously presented) A fluorescent substance according to claim 1, wherein said excitation source is an electron beam or an X ray.

10. (Previously presented) A fluorescent substance according to claim 1, wherein said peak is within a range of 500nm to 550nm in wavelength.

11. (Previously presented) A fluorescent substance according to claim 1, wherein x and y of a value (x, y) on a CIE chromaticity coordinates of a color of light emitted at a time of being irradiated with said excitation source meet the following relations (i) and (ii):

$$0.5 \leq y \leq 0.83 \dots \dots \dots \dots \dots \dots \dots \quad (\text{ii}) .$$

12. (Previously presented) A fluorescent substance according to claim 1, wherein said nitride or oxy-nitride crystal comprises a single crystal of 50nm to 20 μ m in average grain diameter.

13. (Previously presented A fluorescent substance according to claim 1, wherein said nitride or oxy-nitride crystal is a single crystal of 1.5 to 20 in average aspect ratio.

14. (Previously presented) A fluorescent substance according to claim 1, wherein a total of impurity elements Fe, Co and Ni contained in said nitride or oxy-nitride crystal is not more than 500ppm.

15-45. (Cancelled)